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PATENT
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of)	
)	
SULLIVAN)	Group Art Unit: 2684
Serial No. 09/477,954)	
)	Examiner: Harry, A.T.
Filed: January 5, 2000)	
)	
For: AN ANTENNA SYSTEM FOR)	
A WIRELESS)	
<u>COMMUNICATION DEVICE</u>)	

APPEAL BRIEF

RECEIVED

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AUG 20 2003

OFFICE OF PETITIONS

Sir:

This is an appeal from the decision of the Examiner mailed on April 23, 2002, finally rejecting claims 3-14 of the above-identified patent application.

REAL PARTY IN INTEREST

The real party in interest in this appeal is Centurion International, Inc. as is evidenced by an Assignment filed at Reel 010686, Frame 0297.

RELATED APPEALS AND INTERFERENCES

Neither Appellant, Appellant's legal representative, nor Appellant's assignee know of appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in the present appeal.

STATUS OF CLAIMS

RECEIVED

Claims 3-14 remain in this application.

AUG 20 2003

This appeal is taken from the final rejection of claims 3-14.

OFFICE OF PETITIONS

No claims are allowed.

STATUS OF AMENDMENTS

An Amendment after Final Rejection was filed on June 13, 2002, in response to the April 23, 2002 Final Office Action. The Examiner did not enter the Amendment after Final because the Amendment did not place the claims in condition for allowance or place the claims in better form for appeal. The Amendment after Final Rejection requested that the Examiner reconsider the rejection, but no amendment has been filed subsequent to the final rejection mailed on April 23, 2002. After consideration, the Examiner maintained the rejections in the April 23, 2002 Final Office Action.

SUMMARY OF THE INVENTION

The present invention relates to wireless communication devices. More particularly, the present invention relates to a wireless communication device 10 that has two independent antennas, an external, retractable antenna 22 and an internal antenna 20. The internal 20 and external 22 antennas are mounted directly on one another or mechanically coupled as indicated in figures 2 and 3 and independent claims 5 and 10. The internal 20 and external 22 antennas are electrically isolated from one another as indicated in independent claims 5 and 10. A switching mechanism associated with wireless communication device 10 allows switching between the use of the internal antenna 20 and the external, retractable antenna 22. As the below references to the specification identify, the present invention provides two electrically separate antennas that work independently of each other. In other words, when internal antenna 20 is in use, external antenna 22 is not; and

when external antenna 22 is in use, internal antenna 20 is not. This functionality is specifically identified in the specification at the following:

- [A] switching mechanism will be utilized in the device which operatively connects the internal and external antennas to the transceiver circuit so that the internal antenna is normally in circuit and wherein said external antenna is normally out of circuit when in its retracted position. The switching mechanism switches the internal antenna out of circuit and switches the external antenna in circuit when the external antenna is in its extended position." (Summary of the Invention, page 2, lines 15-20).
- [An] antenna switching device will be utilized to electrically connect one antenna to the transceiver circuit while *disconnecting* the second antenna from the transceiver circuit. (Description of the Preferred Embodiment, page 4, lines 23-25 (emphasis added)).

ISSUES

The issues present by the present appeal are:

- (1) Are claims 7 and 13 supported by the original specification?
- (2) Are claims 5, 6, 10, and 12 unpatentable under 35 U.S.C. § 103(a) as obvious over U.S. Patent 6,064,863 ("Matai") taken alone?
- (3) Are claims 3, 4, 8, and 9 unpatentable under 35 U.S.C. § 103(a) as obvious over Matai in view of U.S. Patent 6,171,123 ("Chang")?
- (4) Are claims 11 and 14 unpatentable under 35 U.S.C. § 103(a) as obvious over Matai in view of Chang?

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GROUPING OF CLAIMS

The claims on appeal do not stand or fall together.

SUMMARY OF THE EXAMINER'S FINAL REJECTION

The Examiner finally rejected claims 3-14 in an April 23, 2002 Final Office Action.

GROUP I

The Examiner rejected claims 7 and 13 under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not contained in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time of the application was filed, had possession of the claimed invention. Claims 7 and 13 both include a limitation that the internal and external antennas are electrically isolated from one another at all times. The Examiner quotes a portion of the specification that states that the internal antenna is the primary antenna and that the external antenna is the secondary antenna, to indicate that the antennas are electrically connected to one another.

GROUP II

The Examiner rejected claims 5, 6, 10, and 12 under 35 U.S.C. § 103(a) as being unpatentable over Matai.

With regard to claim 5, the Examiner is of the opinion that Matai discloses all of the limitations except "a transceiver circuit disposed within said housing". The Examiner claims that it would have been obvious to one skilled in the art to replace a radio circuit with a transceiver circuit. Therefore, all of the limitations included in claim 5 are obvious in view of Matai. In particular, the Examiner states that the limitation "an external, retractable antenna movably mounted on said internal antenna ..." is taught in Matai at column 2, lines 23-34.

With regard to claim 6, the Examiner states that when Matai is modified in the manner described above (substitute transceiver circuit for

radio circuit), that Matai discloses a switching mechanism for switching between the internal and external antenna.

With regard to claim 10, the Examiner states that when Matai is modified in the manner described above (substitute transceiver circuit for radio circuit), that Matai discloses all of the limitations included in this claim. In particular, the Examiner states that the limitation “an external retractable antenna movably mounted on said internal antenna ...” is taught in Matai at column 2, lines 25-34 and figure 2A.

With regard to claim 12, the Examiner states that when Matai is modified in the manner described above (substitute transceiver circuit for radio circuit), that Matai discloses a switching mechanism for switching between the internal and external antenna.

GROUP III

The Examiner rejected claims 3, 4, 8, and 9 under 35 U.S.C. § 103(a) as being unpatentable over Matai as applied to claim 5 above, and further in view of Chang. It should be noted that while the Examiner neglected to formally reject claim 9, Applicant believes it would have been included with claims 3, 4, and 8 because they all contain similar subject matter.

With regard to claims 3, 4, and 8, the Examiner states that when Matai is modified in the manner described above (substitute transceiver circuit for radio circuit) it still fails to teach a remote RF port that is connected to the internal antenna. However, Chang discloses an electrical connector or RF port that is mechanically connected to an internal antenna. Therefore, the combination of Matai and Chang teach all of the limitations of claims 3 and 8.

GROUP IV

The Examiner rejected claims 11 and 14 under 35 U.S.C. § 103(a) as being unpatentable over Matai as applied to claim 10 above, and further in view of Chang.

With regard to claims 11 and 14, the Examiner states that when Matai is modified in the manner described above (substitute transceiver circuit for radio circuit) it still fails to teach a remote RF port that is connected to the internal antenna. However, Chang discloses an electrical connector or RF port that is mechanically connected to an internal antenna. Therefore, the combination of Matai and Chang teach all of the limitations of claims 11 and 14.

SUMMARY OF THE REFERENCES

Background

Wireless communication is used to transmit data from one location to another without a physical connection. One form of wireless communication involves transmitting and receiving radio frequency (RF) signals. This form of wireless data transfer has been used for over fifty years in the form of radio broadcasting. Recently, RF signals have been used to provide two-way communications in the form of cellular telephones. Cellular telephones include a RF transmitter and a RF receiver for transmitting and receiving RF signals.

Another aspect of a cellular telephone is an antenna. An antenna is used to assist in transmitting and/or receiving RF signals. This is analogous to how an antenna is used on a conventional radio or television to assist in receiving RF signals. The electrical configuration of the antenna in a particular cellular telephone dramatically affects the signal strength with

which that particular cellular telephone is able to transmit and/or receive RF signals.

Yet another aspect of a cellular phone is the mechanical configuration of its various components. Cellular phones often include a housing, at least one antenna, a printed circuit board, etc. As cellular phones become more popular, it is important for them to conform to various aesthetic shapes and sizes. In addition, these shapes and sizes must also maintain or increase the cellular phones ability to transmit and/or receive RF signals.

Matai

Matai relates to a portable radio device having two antennas, wherein the two antennas are used in conjunction to improve the radio's ability to receive wireless signals. The electrical configuration of the antennas is configured such that when one of the antennas is not in use, it is used to contribute to the performance of the other antenna (Matai column 2, lines 20-22). The device includes a printed circuit board, a switch, and a housing. The two antennas are physically separated from one another by being positioned on either side of the printed circuit board to facilitate the operation of switching between them (Matai column 2, lines 40-43). In addition, the particular electrical and mechanical configurations of the two antennas, described in Matai, is designed to maximize the overall gain.

In summary, Matai discloses a radio portable remote terminal device that utilizes two mechanically separate but electrically coupled antennas. The two antennas are designed to be used in conjunction with one another to increase the overall gain.

Chang

Chang relates to an electrical connector that can be used to couple an additional antenna to a portable wireless communication device. Portable

devices, such as cellular phones, occasionally require additional ability to transmit and receive distant signals that they are not otherwise able to receive or transmit with existing antenna. Therefore, portable devices must occasionally be electrically connected to an additional antenna that provides a longer range for transmitting and receiving distant signals. Chang discloses an electrical connector that allows an additional antenna to be electrically coupled to an internal antenna (Chang column 2, lines 47-53).

ARGUMENT

GROUP I

The Examiner rejected claims 7 and 13 under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not contained in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time of the application was filed, had possession of the claimed invention. The Appellant respectfully traverses this rejection.

Claims 7 and 13 both include a limitation that the internal and external antennas are electrically isolated from one another at all times. The Examiner relies on the following statement read in isolation without consideration of the entire specification to claim this limitation is new matter, “when the external retractable antenna is retracted, it is disconnected from the antenna feed circuitry and the internal antenna is connected. The internal antenna 20 functions as a primary antenna while the retractable antenna functions as a secondary antenna”. This statement merely indicates that when the external, retractable antenna is retracted, the internal antenna functions as the primary, default antenna while the external antenna functions as a reserve antenna. This interpretation is consistent with the remainder of the specification that clearly describes the functionality of the two antennas as being electrically

independent of each other. For example, independent claims 5 and 10 both include limitations regarding how only one of the antennas is in circuit with the transceiver at a particular configuration of the external antenna. Further, the Original Specification states, as outlined above:

- [A] switching mechanism will be utilized in the device which operatively connects the internal and external antennas to the transceiver circuit so that the internal antenna is normally in circuit and wherein said external antenna is normally out of circuit when in its retracted position. The switching mechanism switches the internal antenna out of circuit and switches the external antenna in circuit when the external antenna is in its extended position." (Summary of the Invention, page 2, lines 15-20).
- [An] antenna switching device will be utilized to electrically connect one antenna to the transceiver circuit while *disconnecting* the second antenna from the transceiver circuit. (Description of the Preferred Embodiment, page 4, lines 23-25 (emphasis added).

Therefore, the internal and external antennas are electrically isolated from one another because they are never connected to the transceiver circuit at the same time.

In addition, the Examiner cites claim 10 which includes the limitation, "an external, retractable antenna movably mounted on said internal antenna ..." to indicate that the antennas are electrically connected. However, this statement clearly refers to the mechanical connection between the internal and external antenna and not the electrical connection. The external antenna is mechanically mounted directly on the internal antenna, as shown in Figures 2 and 3, to minimize the overall dimensions of the cellular telephone. But the Original Specification clearly states that only one antenna is electrically coupled to the transceiver circuit at a time. For example, at page 4, lines 23-25, the Original Specification states: "In some cases, an antenna switching device will be utilized to electrically connect one antenna to the transceiver circuit while disconnecting the second antenna from the transceiver circuit".

(Specification, page 4, lines 23-25). This statement clearly provides a foundation that only one antenna is electrically connected to the transceiver circuit at a time. Because only one antenna is electrically connected at a time, the second antenna must be disconnected, or electrically isolated, from the transceiver circuit. Therefore, for at least these reasons, it is not new matter to assert that the internal and external antennas are electrically isolated at all times.

GROUP II

The Examiner rejected claims 5, 6, 10, and 12 under 35 U.S.C. § 103(a) as being unpatentable over Matai. The Appellant respectfully traverses this rejection.

Claims 5 and 10 are independent while claims 6 and 12 depend therefrom. Therefore, claims 5, 6, 10, and 12 all include the following limitation, “an external, retractable antenna movably mounted on said internal antenna ...”. The direct mechanical coupling between the external and internal antennas is also shown in Figures 2 and 3 of the application. Matai does not teach or disclose this limitation. In fact, Matai clearly teaches away from this limitation by stating that the two antennas are positioned on opposite sides of the printed circuit board to facilitate switching. Matai column 2, lines 37-43. The positioning of the printed circuit board 101 between the internal antenna means 111-114 and the external antenna means 121-125 is also clearly shown in Figures 2A and 2B of Matai.

In addition, claims 5, 6, 10, and 12 all include the following limitations:

said internal antenna being in circuit with said transceiver circuit when said external antenna is in its said retracted position;

said internal antenna being out of circuit with said transceiver circuit when said external antenna is in its said extended position;

said external antenna being in circuit with said transceiver circuit when in its said extended position;

said external antenna being out of circuit with said transceiver circuit when in its said retracted position.

The internal antenna is in circuit only when the external antenna is out of circuit and vice versa. Therefore, the above limitations claim that the internal and external antennas are electrically independent from one another. Matai does not teach or disclose this limitation. On the contrary, Matai teaches away from the electrical independence of the two antennas by electrically coupling the two antennas together in an effort to boost the gain characteristics of the overall device. Matai abstract; column 1, lines 10-13; column 2, lines 20-22; column 5, lines 6-15. Specifically, the device utilizes both the external and internal antennas for transmitting and receiving RF signals when the external antenna is in the extended position. Matai column 2, lines 20-22. In Matai, when the external antenna element 121 is in the extended position, "the internal antenna means 111 to 114 function as the ground means of the external antenna means 121 to 125 so that they contribute to a gain improvement of the external antenna means 121 to 125. Matai column 5, lines 11-15.

In summary, Matai teaches a radio device that includes two antennas that are mechanically separate but electrically coupled. In contrast, the present invention teaches a transceiver device that includes two antennas that are mechanically coupled but electrically separate. Therefore, for at least the reasons outlined above, claims 5, 6, 10, and 12 are patentably distinct from Matai.

GROUP III

The Examiner rejected claims 3, 4, 8, and 9 under 35 U.S.C. § 103(a) as being unpatentable over Matai as applied to claim 5 above, and further in view of Chang. The Appellant respectfully traverses this rejection.

Claims 3, 4, 8, and 9 are all dependent from claim 5 and are therefore patentably distinct from Matai for at least the reasons outlined above with respect to claim 5.

In addition, claims 3, 4, 8, and 9 all include the limitation that a remote RF port is mechanically connected to the internal antenna. Chang does not teach this limitation. Chang teaches an electrical port that can be electrically coupled to a wireless device to allow an additional antenna to be connected to the device. Chang column 2, lines 47-53. There is no suggestion or teaching in either Chang or Matai to electrically connect an RF port to an internal antenna. Therefore, claims 3, 4, 8, and 9 are patentably distinct from Matai or Chang either alone or in any reasonable combination thereof.

GROUP IV

The Examiner rejected claims 11 and 14 under 35 U.S.C. § 103(a) as being unpatentable over Matai as applied to claim 10 above, and further in view of Chang. The Appellant respectfully traverses this rejection.

Claims 11 and 14 are dependent from claim 10 and are therefore patentably distinct from Matai for at least the reasons outlined above with respect to claim 10.

In addition, claims 11 and 14 both include the limitation that a remote RF port is mechanically connected to the internal antenna. Chang does not teach this limitation. Chang teaches an electrical port that can be electrically coupled to a wireless device to allow an additional antenna to be connected to the device. Chang column 2, lines 47-53. There is no suggestion or teaching in either Chang or Matai to electrically connect an RF port to an internal antenna. Therefore, claims 11 and 14 are patentably distinct from Matai or Chang either alone or in any reasonable combination thereof.

Request:

Reversal of the Examiner's final rejection of claims 3-14 under 35 U.S.C. § 112 and 103(a) is respectfully requested for the above-stated reasons.

Signed this 15 day of August, 2003.

Respectfully submitted,



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APPENDIX

Claims 3-14 involved in this Appeal read as follows:

3. The wireless communication device of claim 5 wherein a remote RF port is provided which is mechanically connected to said internal antenna.
4. The wireless communication device of claim 6 wherein a remote RF port is provided which is mechanically connected to said internal antenna.
5. A wireless communication device, comprising:
 - a housing;
 - a transceiver circuit disposed within said housing;
 - an internal antenna disposed within said housing;
 - an external, retractable antenna movably mounted on said internal antenna and being movable between a retracted position and an extended position with respect thereto;
 - said internal antenna being in circuit with said transceiver circuit when said external antenna is in its said retracted position;
 - said internal antenna being out of circuit with said transceiver circuit when said external antenna is in its said extended position;
 - said external antenna being in circuit with said transceiver circuit when in its said extended position;

said external antenna being out of circuit with said transceiver circuit when in its said retracted position.

6. The wireless communication device of claim 5 wherein a switching mechanism selectively connects either said external antenna or said internal antenna to said transceiver circuit.
7. The wireless communication device of claim 5 wherein said internal and external antennas are electrically disconnected from one another at all times.
8. The wireless communication device of claim 5 wherein a remote RF port is provided in said housing which is mechanically connected to said internal antenna.
9. The wireless communication device of claim 7 wherein a remote RF port is provided in said housing which is mechanically connected to said internal antenna.
10. A wireless communication device, comprising:
 - a housing including a front housing member and a back housing member;
 - said front and back housing members having upper and lower ends;
 - a printed circuit board positioned in said housing adjacent said front housing member which functions as a transceiver circuit;

- an internal antenna positioned in said housing adjacent said upper end of said back housing member;
- an external, retractable antenna movably mounted on said internal antenna and being movable between a retracted position and an extended position with respect thereto;
- said internal antenna being in circuit with said transceiver circuit when said external antenna is in its said retracted position;
- said internal antenna being out of circuit with said transceiver circuit when said external antenna is in its said extended position;
- said external antenna being in circuit with said transceiver circuit when in its said extended position;
- said external antenna being out of circuit with said transceiver circuit when in its said retracted position.
11. The wireless communication device of claim 10 wherein said internal antenna has a front and back sides and wherein said back side of said internal antenna has a remote RF port formed in its back side; said back housing member having an opening formed therein which communicates with said remote RF port.
12. The wireless communication device of claim 10 wherein a switching mechanism selectively connects either said

external antenna or said internal antenna to said transceiver circuit.

13. The wireless communication device of claim 10 wherein said internal and external antennas are electrically disconnected from one another at all times.
14. The wireless communication device of claim 10 wherein a remote RF port is provided which is mechanically connected to said internal antenna.